

ABSTRACT OF THE DISCLOSURE

A split-gate flash memory cell having improved programming and erasing speed with a tilted trench source, and also a method of forming the same are provided. This is accomplished by forming two floating gates and their respective control gates sharing a common source region. A trench is formed in the source region and the walls are sloped to have a tilt. A source implant is performed at a tilt angle and the trench is lined with a gate oxide layer. Subsequently, a lateral diffusion of the source implant is performed followed by thermal cycling. The lateral enlargement of the diffused source is found to increase the coupling ratio of the split-gate flash memory cell substantially.